

[illegible]

A catalyst system to provide emission reductions under lean and stoichiometric conditions. The catalyst system comprises a forward catalyst having a first cerium-free zone including oxides of aluminum, alkali metals and alkaline earth metals and precious metals and a second zone with a lower loading of precious metals, oxides of aluminum, alkali metals or alkaline earth metals. This forward catalyst stores NOx emissions under lean conditions for subsequent reduction and converts HC, CO and NOx during stoichiometric operation. The second downstream catalyst includes precious metals, reduces emissions under stoichiometric conditions, and stores any residual NOx emitted from the first catalyst for subsequent reduction. In another embodiment, a forward catalyst has top and bottom layers designed to reduce emissions under lean conditions. In this embodiment, a second downstream catalyst is used to reduce emissions under stoichiometric conditions. In yet another catalyst, multiple zones are created within a single catalyst.

## Figures